

REMARKS/ARGUMENTS

Claims 19-22 are pending in the present application. Claims 19-22 are independent claims.

In view of the remarks set forth below, the Examiner is respectfully requested to reconsider the outstanding rejection of the pending claims.

Claim Rejections Under 35 U.S.C. § 102

Claims 19-22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Canadian Patent No. 2,112,145 to Nomura et al. (hereinafter Nomura). This rejection is respectfully traversed.

Independent claims 19-22 recite evaluating a noise level of speech in a decoding period using a decoded gain of the speech in the decoding period. Applicants respectfully submit that Nomura fails to disclose this feature.

Synopsis of Nomura

Nomura discloses a speech decoder that detects and compensates for errors in a received, coded speech signal. Nomura attempts to improve upon prior speech decoders, which handle detected errors in a speech frame by replacing the frame with previous frame data. Specifically, Nomura points out that a problem may occur in the prior speech decoders when errors are detected in frames that transition from a voiced to unvoiced signal. According

to Nomura, this problem may prevent unvoiced features in the error frame from being adequately reproduced.

Nomura's speech decoding system is designed to solve the above problem. In Nomura, the speech decoder includes an error detection unit 110 for determining whether an error has occurred in the current speech frame. If an error is detected, Nomura's decoder operates as follows:

The 1st switch circuit 130 outputs the frame data to both the speech decoder unit 140 and a second switch circuit 180. Then, the decoded frame data is sent from the speech decoder unit 140 to a voiced/unvoiced frame judging unit 170. Nomura's voiced/unvoiced frame judging unit 170 determines whether the current frame represents voiced data or unvoiced data.

If the current frame is judged to be a voiced one, Nomura's 2nd switch circuit 180 outputs the frame to bad frame masking unit 150, which masks the detected error by using previous frame information, including pitch information. On the other hand, if the current frame is judged to be unvoiced, the 2nd switch circuit sends the frame data to bad frame masking unit 160, which masks the errors using previous frame data not including pitch information.

The above operation is described in Fig. 1 and page 5, line 11 – page 7, line 13 of Nomura.

Nomura's Voiced/Unvoiced Judging Unit Does Not Use Decoded Gain

Although Nomura's voiced/unvoiced frame judging unit 170 performs a function similar to that of evaluating the noise level of speech, Applicants respectfully submit that Nomura fails to disclose using a decoded gain to perform this function.

As disclosed in Fig. 2 and page 7, line 19 - page 8, line 12 of Nomura, the voiced/unvoiced frame judging unit 170 makes its determination as to whether the current frame is voiced or unvoiced based on a pitch estimation gain and rms values. Page 7, line 26 - page 8, line 1 of Nomura specifically discloses that the pitch estimation gain is determined according to formula (1). This formula (found on page 13, line 25) does not use any decoded gain values for the current frame. Instead, this formula merely allows Nomura's system to estimate a pitch gain using previous frame data.

Thus, there is no disclosure in Nomura that the voiced/unvoiced frame judging unit 170 uses a decoded gain for the current frame to determine whether a frame is voiced or unvoiced.

Nomura's Bad Frame Masking Units Do Not Evaluate Noise Level

In page 3 of the Office Action, the Examiner seems to interpret the bad frame masking units 150 and 160 of Nomura as disclosing noise level evaluator. Applicants respectfully submit that this interpretation is incorrect.

Nomura discloses that, if an error is detected in the current frame, a bad

frame masking unit (150 or 160) compensates for the error by taking stored vectors from the excitation code book, or from both the excitation and adaptive code books, and multiplying these vectors by the gain of the previous frame (See, e.g., Nomura at page 8, lines 3-8; page 9, lines 24-27). The multiplied vectors are weighted vectors, which are sent to the synthesis filter to reproduce an output speech signal for the current frame.

There is no disclosure in Nomura that either of these bad frame masking units 150 and 160 actually evaluates a noise level. Also, there is no disclosure that the bad frame masking units 150 and 160 use a decoded gain for the current frame or decoding period.

Conclusion

Accordingly, Applicants respectfully submit that Nomura fails to disclose evaluating a noise level of speech in a particular decoding period by using a gain decoded for that decoding period, as required by independent claims 19-22. It is respectfully submitted that claim 19-22 are allowable at least for this reason. Thus, the Examiner is respectfully requested to reconsider and withdraw this rejection.

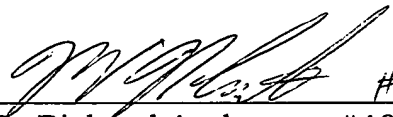
In view of the above remarks, it is respectfully submitted that the pending claims are now in condition for allowance. Accordingly, the Examiner is respectfully requested to reconsider the outstanding claim rejections, and issue a Notice of Allowance in connection with the present application.

Should the Examiner believe that any outstanding matters need to be resolved in the present application, the Examiner is respectfully requested to contact Jason W. Rhodes (Reg. No. 47,305) at the telephone number of the undersigned in order to discuss the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By  # 39,491
f. D. Richard Anderson, #40,439


DRA/JWR/kpc

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000